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REMARKS

By this Amendment, claim 16 is amended to correct an inadvertent error. Claims 1-10 were previously canceled, and claims 11-19 were previously presented by the Preliminary Amendment filed September 21, 2004. Claims 13 and 18 were previously canceled by the Amendment filed March 14, 2006. No new claims are presented for examination. Accordingly, claims 11-12, 14-17 and 19 are pending in the application.

Claim Objections

Pursuant to the Office Action, claim 16 stands objected to because of the noted informality. Claim 16 is amended herein to correct the inadvertent error. Accordingly, Applicant respectfully requests the Examiner to withdraw the objection to the claims.

Claim Rejections – 35 U.S.C. §103

Pursuant to the Office Action, claims 11-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable (obvious) over Hsu et al. (US 5,016,971) in view of Corke et al. (EP 0234325). The Examiner asserts that Hsu et al. "discloses an optical device with the limitations set forth in the claims, except it does not explicitly teach moving the impingement point with varying frequency (i.e., varying speeds)." Office Action at page 2. The Examiner further asserts that Hsu et al. discloses: "moving the laser beam such that *a position of the impingement point is moved in the longitudinal direction of the optical fibers in a predetermined area around a splicing point of the optical fibers* (column 3, lines 43-45); wherein the laser has an associated laser control unit in which *the intensity of the laser beam is modulated in conjunction with the movement of the optical component* (column 3, lines 18-24; column 3 lines 55-62)." Office Action at page 3 (emphasis added). Finally, the Examiner asserts that Corke et al. "explicitly teaches steps of moving the impingement point with varying periodicity (therefore, varying speeds) such that the duration of one period of the position of the impingement point is shorter than the thermal time constant of the

optical fibers (page 5 line 22 – page 6 line 30)." Id. Therefore, the Examiner concludes that it would have been obvious to a person of ordinary skill at the time the invention was made to modify the device of Hsu et al. to have steps of moving the impingement point with varying periodicity as taught by Corke et al. to allow for precise heating and splicing of optical fibers. Id.

Applicant respectfully traverses the rejection. Hsu et al. discloses a device and process for fusion splicing of optical fibers. Once the optical fibers **15, 19** are in precise alignment, "the fusing of the fibers **15** and **19** is accomplished by directing a high intensity beam of energy at the junction **23** of the fibers and controlling *the focus* of the beam to provide an optimum temperature profile of the energy applied to the splice." Column 3, lines 19-24 (emphasis added). "The laser beam **37** is directed to the splicing junction **23** by second and third 45 degree mirrors **39** and **41** through a focus control assembly **43**. As illustrated in **FIG. 2**, the focus control assembly **43** includes a first movable lens **45** and second and third stationary lens **47** and **49**. The position of the first lens **45** is controlled by the position controller **21** through a translation table and the selective activation of a D.C. motor **51**. Column 3, lines 28-36; FIG. 2. "The longitudinal axis of the beam **37** *is transverse* to the longitudinal axes of the fibers **15** and **19**. Column 3, lines 51-53 (emphasis added). "Thus, as energy from the beam is applied to the fibers **15** and **19** at the junction **23**, the lens **45** is moved to change the focus thereof to provide an optimum temperature profile for the fibers being spliced. Column 3, lines 55-58. The controller includes a microprocessor which executes a simple servo program to provide control signals to the motor **51** effective to position the lens **45** to provide the desired *beam spot size* and hence an optimum temperature profile. Column 3, lines 63-67 (emphasis added).

As clearly indicated by the double-headed arrow in **FIG. 2**, the lens **45** is movable by the motor **51** along the direction of the laser beam **37** transverse to the longitudinal axes of the fibers **15** and **19** to focus the beam, and thereby, provide the desired beam spot size at the junction **23**. The independent claims 11 and 16 of the present invention, however, require the laser beam be moved *according to a frequency* such that a position of the impingement point is *periodically* moved in the *longitudinal direction of the optical fibers* in a predetermined area around a splicing point of

the optical fibers. Hsu et al. does not disclose that the position of the impingement point of the laser beam is moved periodically, or that the position of the impingement point of the laser beam is moved in the longitudinal direction of the optical fibers. Instead, Hsu et al. merely teaches moving a lens along the direction of the laser beam transverse to the optical fibers to focus the laser beam (and thereby change the beam spot size) at the junction of the fibers to be spliced to obtain an optimum temperature profile. In addition, Hsu et al. does not disclose that the *speed* of the movement of the impingement point is changed for modulation of the movement of the impingement point with *a predetermined frequency* of the movement of the laser beam, as required by independent claim 11. In addition, Hsu et al. does not disclose that the *intensity* of the laser beam is modulated in conjunction with the movement of the optical component (i.e., lens 45). Instead, Hsu et al. teaches a laser beam having a constant intensity and moving the lens 45 to adjust the beam spot size (and hence the power density) to obtain an optimum temperature profile.

Corke et al. relates to a multimode optical coupler for splicing optical fibers. A laser beam 13 directly heats the optical fibers 1a, 1b and a ceramic member 15 located in proximity to and at a predetermined spacing from the fibers in turn also indirectly heats the fibers. The *fibers* are moved in a back and forth motion to cause an effective scan of the fibers past the heated ceramic member. Page 5, line 28 to page 6, line 7. Thus, Corke et al. does not teach moving a laser beam according to a frequency such that an impingement point of the laser beam on the optical fibers is moved periodically in the longitudinal direction of the fibers. Corke et al. also does not teach changing the speed of the movement of the impingement point with a predetermined frequency of the movement of the laser beam, or modulating the intensity of the laser beam in conjunction with the movement of an optical component (e.g., mirror or lens) to produce a desired power density. As a result, the combination of the references proposed by the Examiner does not produce the claimed invention.

In short, none of the cited references, either alone or in combination, identically discloses or arguably suggests producing a power density profile for fusion splicing optical fibers by

modulating the movement of an optical component (i.e., mirror 17) according to a frequency in conjunction with modulating the intensity of the laser beam. Thus, independent claims 11 and 16 are patentable for at least these reasons. Claims 12 and 14-15 depend directly or indirectly from patentable base claim 11, and thus, are likewise allowable for at least the same reasons. Claim 17 and 19 depend directly or indirectly from patentable base claim 16, and thus, are likewise allowable for at least the same reason. Accordingly, Applicant respectfully requests the Examiner to withdraw the rejection to claims 11-19 under 35 U.S.C. 103(a).

In summary, Applicant submits that the pending claims 11-12, 14-17 and 19 are patentable for at least reasons discussed herein. Regardless, Applicant expressly reserves the right to present additional arguments in support of the patentability of the claims in the event that the Examiner disagrees with the arguments presented herein.

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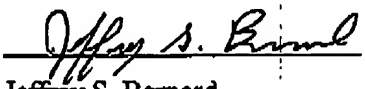
CONCLUSION

The presently pending claims 11-12, 14-17 and 19 are allowable for at least the reasons stated herein. This response is being timely filed with a petition and fee for one (1) month extension of time and is fully responsive to the Office Action. Accordingly, Applicant submits that the application is now in condition for immediate allowance, and the undersigned respectfully solicits such action on the part of the Examiner.

This response does not result in more independent or total claims than paid for previously. Accordingly, no fee for excess claims is due. The Examiner is hereby authorized to charge any other fee due in connection with the filing of this response to Deposit Account No. 19-2167. If an extension of time not already accounted for is required with this response, Applicant hereby petitions for such extension of time and the Examiner is likewise authorized to charge the petition fee to Deposit Account No. 19-2167. Any overpayment should be credited to Deposit Account No. 19-2167.

Respectfully submitted,



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